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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,025	07/11/2003	Makoto Komatsu	2003-0950A	2714

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EXAMINER
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ASINOVSKY, OLGA

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/617,025	<b>Applicant(s)</b> KOMATSU ET AL.	
	<b>Examiner</b> Olga Asinovsky	<b>Art Unit</b> 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 and 22-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                        |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

## **DETAILED ACTION**

### ***Response to Amendment***

Claim 1 is amended by the amendment of August 24, 2005 and also said claim recites the limitation of the previously presented amendment of 05/21/2005. The amendment of August 24, 2005 includes claim 34 as (Previously presented) by the amendment of 05/21/2005.

Claims 8-11, 22-33 are withdrawn from consideration as non-elected inventions.

Applicants elected the invention of Group I, claims 1-7 and 12-21 with traverse of December 17, 2004.

Newly submitted claim 34 of May 25, 2005 and recited as previously presented in the amendment of August 24, 2005 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: new claim 34 drawn to a solid reagent wherein the solid reagent is consumed along the progress of the reaction to undergo changes in functional groups and thus lose reactivity as a reagent, and wherein the solid reagent may recover its reactivity by restoring the functional groups with a regenerant. The invention of claim 34 is unrelated to the inventions of Groups I, II and III (as originally filed). Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions and different effects because claim 34 requires a regenerant for restoring the functional groups.

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Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 34 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

1. Applicant did not distinctly and specifically point out the supposed errors in the restriction requirement in the paragraph 3 on page 3 in the office action mailed on 07/26/2005.

***Claim Rejections - 35 USC § 112***

1. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 4 recites the limitation "is capable of reacting stoichiometrically with a starting compound by contact with the starting compound to convert the starting compound into a target organic compound." The term "capable" makes the invention indefinite since it is unclear if a solid reagent is reacting with a starting compound. Also, "a starting compound" is not claimed in the claim 1, therefore, there is insufficient antecedent basis for this limitation in the claim 1. And, also, it is unclear that a reactive solid reagent upon contacting with a starting compound can convert a starting compound into a target organic compound. Therefore, a solid reagent in claim 1 is indefinite.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7 and 12-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Garnett et al U.S. Patent 3,880,736 or JP 7041574 (cited by applicants), or Frey et al U.S. Patent 5,863,654, or Sugo et al U.S. Patent 5,648,400.

The rejection is set forth at pages 2-3 of the office action mailed on 01/25/2005 and it is incorporated here by the references.

Applicants amend claim 1 by inserting that “the solid reagent is capable of reacting stoichiometrically with a starting compound.” There is no “starting compound” in the claim 1. A property under term “capable” is not clear that a solid reagent is reacting with a starting compound.

Garnett discloses backbone polymer grafted with a vinyl pyridine monomer via radiation to induce graft polymerization process. The backbone polymer is cellulose, polyethylene, polypropylene or polyvinyl chloride. The grafted vinyl pyridine monomer can have in addition functional group such as amino, halogen and nitro moiety, column 2, lines 15-27. The polyvinylpyridine having functional group is readable in applicants' claimed polymer side chain having reactive functional group. The backbone polymer can be in the form of a film, a woven fabric, a thread, or a powder, column 2, lines 50-

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56. The backbone polymer is readable in applicants' claims 2. The graft polymerization under gamma radiation process is readable in applicants' claims 3, 7. The resulting grafted polymer is in a solid form having reactive functional groups.

JP 7041574 discloses a backbone polymer such as a porous polyethylene membrane or ethylene-tetrafluoroethylene copolymer grafted with chloromethylstyrene and introducing quaternary amine moiety into said graft-polymerization membrane. The graft polymerization is produced via irradiating a porous membrane. The resulting grafted membrane is in a solid form, abstract.

Frey discloses porous hollow fiber made of a polyolefin material that is grafted with polyvinylidene chloride and in further coated with a biocompatible carbon material, column 3, lines 32-35 and 57-65; column 4, lines 19-57; column 8, lines 40-43 and column 20, lines 40-57. The graft polymerization is produced via radiation induced graft polymerization, column 6, lines 36-45, 55-65 and column 13, line 60. The content of functional=reactive hydrogen chloride and a residue of (HCl) is controlled in the amount sufficient of being converted into a coating of a biocompatible carbon material, column 9, lines 19-20 and 33-47. The grafted polyolefin in the form of fiber is a solid reagent wherein the grafted polyvinylidene chloride serves as a reagent for at least of a halogenation reaction for the present claim 4.

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Sugo discloses a process for producing polymeric electrolyte complex and ion-exchange resin. A polymeric substrate is grafted with polymerizable hydrophilic monomer through radiation-initiated graft polymerization process, column 4, lines 5-60. The polyolefin backbone is grafted with a polymerizable monomer that can have styrenesulfonic acid moiety, column 3, lines 24-25. The sulfone groups are reactive functional groups that serve as a reagent for at least of oxidation reaction, for the present claim 4. The obtained ion-exchange resin is a solid reagent.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-7 and 12-21 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,703,432. Although the conflicting claims are not identical, they are not patentably distinct from each other because the chemical formulation of a grafted polymer having a polymer side chain having functional group in claims 1-5 of Patent

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6,703,432 is readable in applicants' claims. The difference between the present claims and claims 1-5 of Patent 6,703,432 is the requirement in the present claims that a grafted polymer is a solid reagent. It would have been obvious to one of ordinary skill in the art to consider that a water adsorbing/desorbing material in claims 1-5 of Patent 6,703,432 is a reactive solid reagent because the polymer side chain having a cation exchange group selected from sulfonate acid group, phosphate group and carboxyl group are reactive groups that impart reactivity property.

6. Claims 1-7 and 12-21 are rejected under 35 U.S.C. 103(a) as being obvious over Fujiwara et al U.S. Patent 6,703,432.

7. The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under



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35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2). See paragraph 5 above for the explanation. A starting compound is not claimed in the present claim 1. In addition, reference discloses a polymer side chain containing a hydrophilic group grafted on the backbone of an organic polymer base, column 1, lines 65-67. A desired graft polymer side chain is introduced into an organic polymer base by irradiating the base, column 2, lines 43-63. The polymer base is woven/nonwoven fabric material. The polymerizable monomers have functional groups, column 3, lines 23-67. The hydrophilic functional groups are reactive groups that work as cation exchange groups or anion exchange groups. And, in addition, Patent 6,703,432 discloses that the cation exchange groups introduced onto the polymer side chain can be expected to not only adsorb water but also adsorb basic gases and remove positively charged particles, column 4, lines 14-17. The anion exchange groups introduced onto the polymer side chain can be expected to not only adsorb water but also adsorb basic gases and remove negative charge particles, column 4, lines 18-45. It would have been obvious to one of ordinary skill in the art to consider that a water adsorbing/desorbing material in Patent 6,703,432 is a reactive solid reagent because the polymer side chain having a cation exchange group selected from sulfonate acid group, phosphate group and carboxyl group or polymerizable monomers having an anion exchange group are reactive groups that impart reactivity property, and wherein the reactive functional groups are reagents for at least of oxidation reaction or reduction reaction.

***Response to Arguments***

Applicant's arguments filed 08/24/2005 and 05/25/2005 have been fully considered but they are not persuasive.

The argument is that none of the references cited by the examiner teaches or suggests a solid reagent as defined in the amended claim 1. Applicants amend claim 1 by inserting that "the solid reagent is capable of reacting stoichiometrically with a starting compound." The argument is the solid reagent is a reactive solid reagent having property of a reaction with a starting compound. However, there is no "starting compound" in the claim 1. A property under term "capable" is not clear that a solid reagent is reacting with a starting compound. Each of the cited reference invention discloses a backbone polymer having grafted function groups such that the resulting solid grafted polymer has property of an ion-exchange resin. The claimed statement "is capable of reacting stoichiometrically" is inherent in each backbone polymer having grafted polymerizable monomer having functional group in the references invention. The invention in claims 1-7 and 12-21 is fully anticipated by the disclosure of either of Garnett or JP 7041574, or Frey, or Sugo.

Applicants argue that Patent 6,703,432 discloses a desiccant material which absorbs or desorbs moisture in gases. Therefore, a desiccant material is "different from a solid reagent that reacts stoichiometrically with a starting compound by contact with the starting compound to transfer the starting compound into a target organic compound, as required by Applicants' amended claim 1." All discussions above in this paragraph are adequately applied for claims 1-5 of Patent 6,793,432. And, in addition, Patent

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6,703,432 is teaching that the cation exchange groups introduced onto the polymer side chain also adsorb basic gases and remove positively charged particles, and the anion exchange groups introduced onto the polymer side chain also adsorb basic gases and remove negative charged particles. The reactive property is teaching in Patent 6,703,432 in the statement of at least "adsorb basic gases."

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

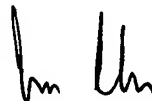
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*O.A.*

October 28, 2005

Olga Asinovsky  
Examiner  
Art Unit 1711



James J. Seidleck  
Supervisory Patent Examiner  
Technology Center 1700